Space Weather Forecast

Issued on Tuesday 15 October 2024 at 13:15 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance G1 Minor Geomagnetic Storm day 1 (15 Oct). Chance of isolated Moderate flares persists.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate activity with a Moderate-class flare observed at 15/0213 UTC from a pair of regions in the south-centre disc. There are seven sunspot regions on the Earth facing disc. The main flare activity has been from the two south-centre disc regions mentioned above, and whilst simplifying in visible appearance with the loss of intermediate spots, the regions continue to show some modest magnetic structure. The two new regions on the east limb currently appear simple and relatively inactive.

No Earth-directed coronal mass ejections (CMEs) have been observed.

Solar Wind / Geomagnetic Activity: Solar winds were initially at background levels. An increase in speeds towards slightly elevated levels was recorded following a weak CME arrival at approximately 14/1717 UTC. The Interplanetary Magnetic Field (IMF) was weak to start, but increased following CME arrival to become moderate. The important north-south component varied weakly initially, becoming generally weakly negative (southward) following CME arrival. Geomagnetic activity was mostly Quiet to Unsettled (Kp0-3), with an Active (Kp4) period between 14/2100-15/0000 UTC..

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) were at background, with no Solar Radiation Storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected with a chance of isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: Ongoing slightly elevated solar winds and weak CME influence are expected to gradually ease through day 1 (15 Oct). However, there is a potential for elevated winds to return for a time on days 1-2 (15-16 Oct) due to any further transitory CME influence or a possible connection to faster winds. A more notable solar wind enhancement is possible into day 4 (18 Oct) and beyond.

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Overall geomagnetic activity is expected to be mainly Quiet to Unsettled. There is a likelihood of Active intervals both to start and end the forecast associated with CME arrival or fast wind influence, and there is a chance of isolated G1 Minor Storm intervals day 1 (15 Oct) given uncertainty with potential CME arrival.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to remain at background, with no Solar Radiation Storms occurring. However, there remains a slight chance of further enhancements given any significant flares.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	10	1	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	40	35	30	30
Very Active	R3-R5 (X Class)	No	5	5	1	1

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	10	10	5	5
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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